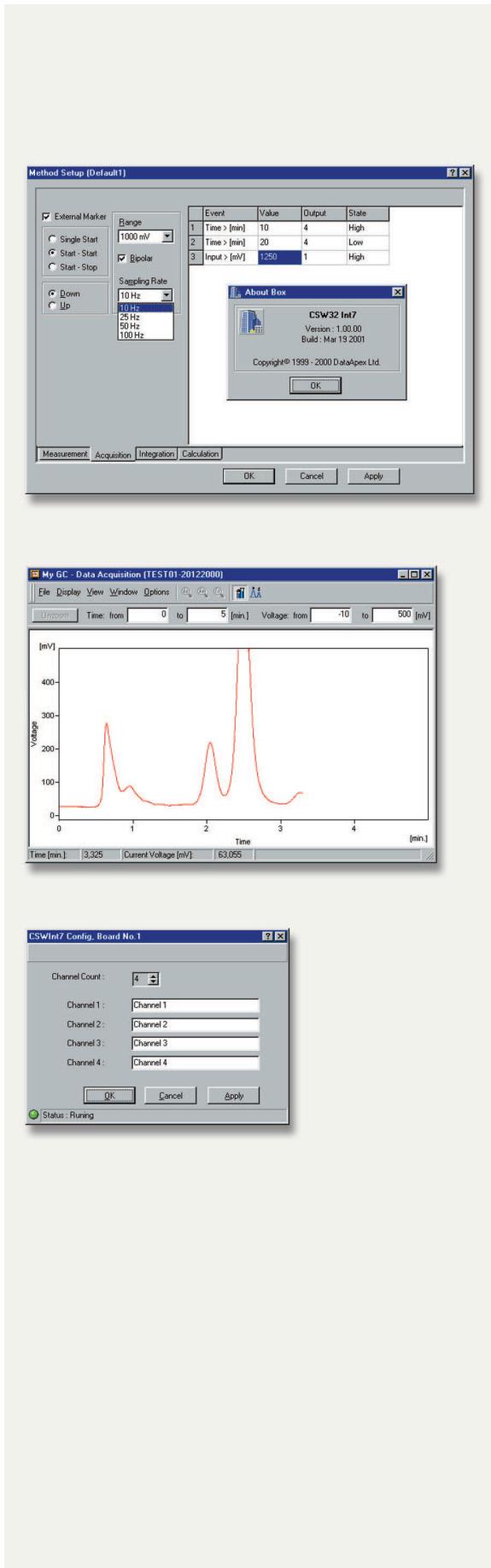




## Data Apex

Clarity  
INT7  
Clarity GPC Module  
U-PAD  
Clarity PDA Module  
Clarity Validation Kit for Operational Qualification



## INT7

### 24 Bit A/D Integration Board for PCI

INT7 board is direct successor of the classical ISA board INT5, with which it has in common the implementation of analogue channels and accordingly consonant key electrical parameters.

#### Among the major advantages counts:

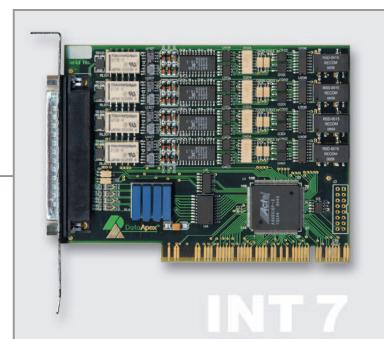
- designed for PCI slot of current PCs
- Plug and Play technology simplifies the installation process under contemporary Windows OS versions
- four channel version directly on one board - the card uses up the space of one PCI slot only
- using the Surface Mounted Technology (SMT) the board gains on reliability and compactness
- improved thermal stability

Unlike the INT5 board, each channel is equipped with one input (the subchannels were abandoned) and also different wiring of the connector has been used.

Reduction connector for replacement of INT5 boards can be supplied on demand.

#### Technical data:

Type of converter	integrating with continuous integration - Sigma - Delta
Resolution	24 bits
Analogue inputs	differential, mutually galvanic separated
Conversion time	10 - 100 ms
Nonlinearity	< 0.0015 %
Temperature drift	< 10 ppm/°C
Nr. of channels	1, 2 or 4 fully independent
Input range	unipolar or bipolar, each channel independently: 100mV -10V
Auxiliary inputs	4 TTL, the first two can be excited through integrated optoelectronic element (current 2-5 mA)
Auxiliary outputs	8 TTL (rating 30 mA), the first four are concurrently controlling relays (200V/0.5A)
Appearance	PCI, Plug and Play Add in board produced by Surface Mounted Technology



INT 7

## Clarity GPC Module

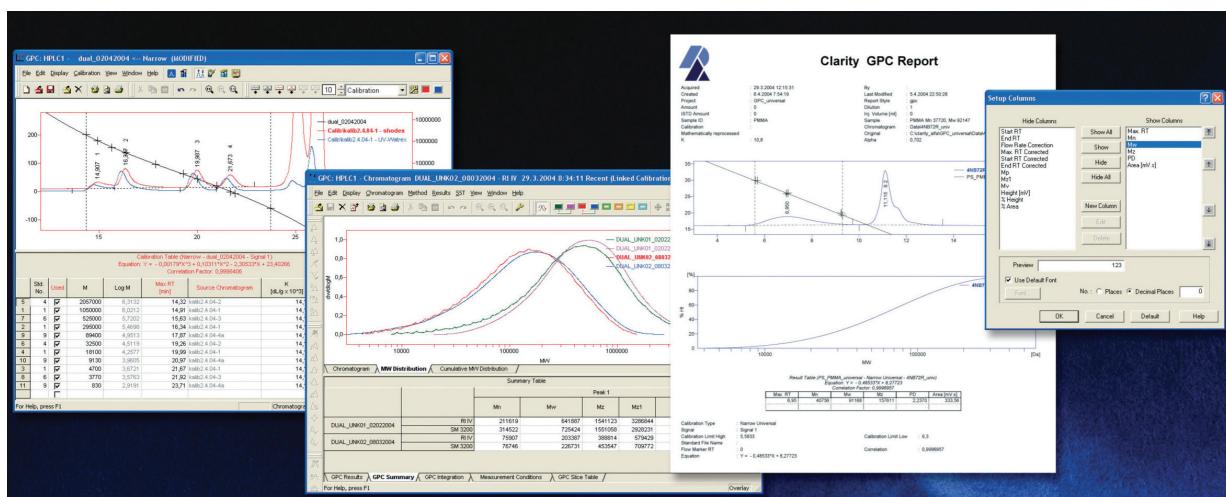
Gel Permeation Chromatography (GPC) / Size Exclusion Chromatography (SEC) is the technique for rapid and reliable characterization of polymer molecular weight and molecular weight distribution.

The GPC module provides an interactive and automated GPC analysis including recalibration GPC reporting as well as simplifying the retrieval of GPC data.

The GPC module allows flow rate and multi-detector delay corrections and includes Narrow, Broad and Broad on Narrow calibrations.

The GPC module is optional add-on software for the Clarity Chromatography Station (from version 2.3) and Clarity EVAL. The Clarity Chromatography Station is designed to acquire and evaluate data from up to four chromatographs at a time (multi detectors measurement supported).

The Clarity Chromatography Station can acquire data from any HPLC system with standard analog output. GPC mode is selectable for any instrument within a station.



## Specification:

**Data Acquisition:** Simultaneous data acquisition from up to four four-detector chromatographs (4X4 configuration), detector delay correction for multidetector measurement.

**Data Processing:** The same chromatograms can be evaluated in both standard and GPC modes, multiple peaks and multiple signals are processed in one chromatogram.

**GPC Integration:** Separate integration tables for GPC and standard evaluation are used. There are extensive possibilities for modifying chromatograms. The chromatogram integration can be changed by entering global parameters or interactively, through the direct graphical modification of the baseline.

**GPC Calibrations:** Narrow, Broad, Broad on Narrow standard calibration methods combined with Flow Rate correction and Universal calibration. Manual calibration or automated recalibration from sequence. Multiple Broad standards can be used.

**GPC Calculations:** Polynomial (n=1-5) curve fits (independent for signals), Mp, Mn, Mw, Mv, Mz, Mz+1 molecular weight averages and polydispersity.

**Graphs:** Molecular weight distribution graphs.

**Overlay:** Simultaneously displays a virtually unlimited number of chromatograms. Overlay of dW/d logM vs log M and cumulative height graphs.

**Export:** Slice Table results, graphs, result and summary tables.

**User Calculations:** User can define custom calculation in the Result and Summary tables. Using the integrated editor you can create your own columns from the original columns and individual mathematical functions.

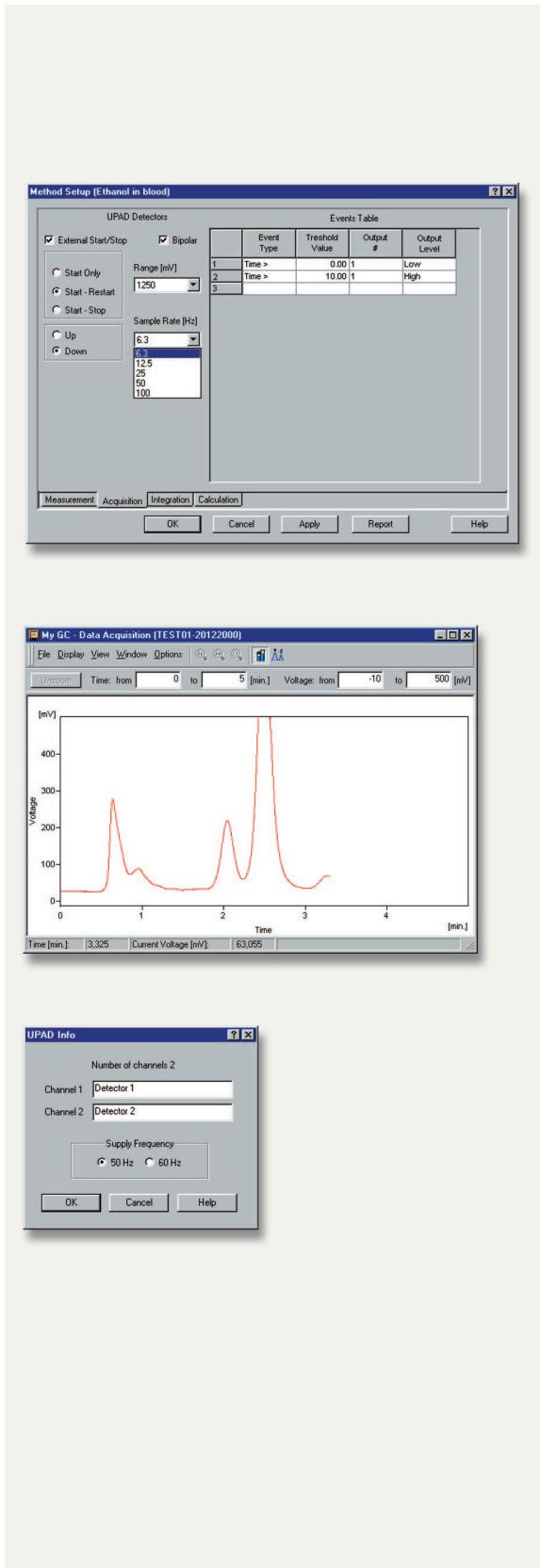
**GPC Results Table:** Displays molecular weight averages together with peak details for active signal. Multiple peaks can be evaluated from one chromatogram.

**GPC Summary Result Tables:** Displays and prints selected results from all simultaneously displayed chromatograms.

**Postrun:** Automatically displays, prints, exports and starts other programs after the completion of a measurement.

**Batch:** Automatically batch processes, displays, exports or prints any number of chromatograms.

**Reports:** User selectable report sections and WYSIWYG formatting of Graphs and Tables.



## U-PAD

U-PAD is a miniature external measuring unit designed for acquisition of data from any chromatograph for the CSW32 station.

U-PAD uses the USB communication channel and thus is directly powered from the PC. The unit can be connected or disconnected anytime without the necessity of disconnecting the computer.

The unit contains two independent channels with the latest 24-bit A/D converters capable of higher effective resolution especially at higher frequencies and at lower voltage ranges. The input connector is compatible with the internal INT7 board.

### Technical data:

Converter type	24-bit integrating, sigma - delta
Inputs	differential, isolated
Number of channels	2
Input range	$\pm 156, 1\,250$ or $12\,560$ mV
Input impedance	1 M $\Omega$
Integration frequency	6.25, 12.5, 25, 50 and 100 Hz (50 Hz rejection) 7.5, 15, 30, 60 and 120 Hz (60 Hz rejection)
Non-linearity	< 0.0015 %
Number of digital inputs/outputs	2/2 (TTL level), direct and isolated
Dimensions	100 x 55 x 16 mm
Weight	110 g
Power supply	from the PC via the USB cable
Internal memory	none

### Noise free resolution for various acquisition speeds and input ranges:

	12 560 mV	1 250 mV	156 mV
6.25 Hz	z bit	22 bit	20 bit
12.5 Hz	21 bit	21.5 bit	20 bit
50 Hz	20.5 bit	21 bit	19 bit
100 Hz	20 bit	20 bit	18.5 bit



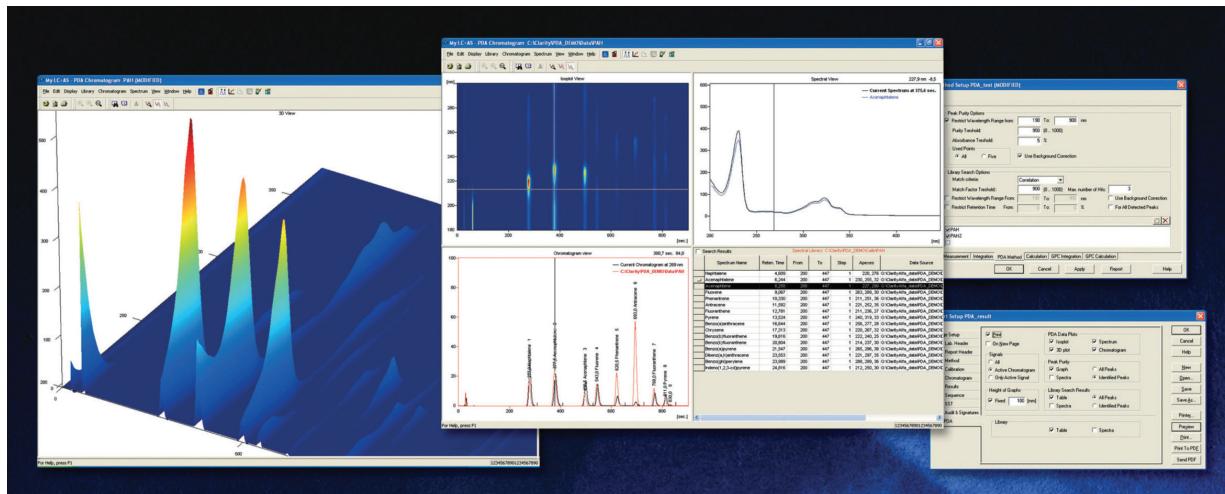
## Clarity PDA Module

The Clarity PDA module is a tool that is used for processing data that has been acquired from selected photo diode array detectors. Spectral data together with chromatograms add a third dimension to analytical data analysis.

The Clarity PDA module expands the capability of Clarity Chromatography software providing interactive spectral analysis, peak purity analysis and compound identification that is based on spectral library search. PDA data can be displayed in a set of optional views including 3D rendering.

The PDA module is optional add-on software for the Clarity Chromatography Station (from version 2.4) and Clarity EVAL. The Clarity Chromatography Station is designed to acquire and evaluate data from up to four chromatographs at a time (multi-detector measurement support).

Any Instrument within Clarity station can use the PDA module.



All data is saved in a single file; a chromatogram at any wavelength or only spectrum can simply be recalled after an analysis for review. UV-VIS spectra, acquired using a PDA detector, may be interactively selected from a chromatogram signal for visual inspection and comparison. The spectra may also be used for peak purity determinations, wavelength optimization and component identification through spectral libraries.

**PDA View:** The PDA view is customizable; up to four views can be displayed at one time (Any combination from the following views may be selected: Isoplot, Chromatogram, Spectra, 3D Display, Peak Purity, Peak Purity Spectra, Library Spectra Search and Spectral Library). The user can easily extract chromatographic signals from PDA data to determine the optimal detection wavelength for each peak.

**PDA Method:** The Clarity PDA method includes an option for **Spectral Library Search** and **Peak Purity** analysis.

**Spectral Library:** The Clarity software compares the peak spectra with the spectra of an unlimited number of spectral libraries. Spectra stored in a Spectral Library include retention times and analysis parameters (optional). The Spectral Library Search can perform automatic identification of integrated/calibrated components (peaks).

The library search may be constrained by the RT Window and by Wavelength Range. Either the Least Square, the Weighted Least square or the Correlation Method is used for calculating library search matches. A Background Correction option is also available.

**Peak Purity:** This analysis helps to discover hidden impurities. Peak Purity test is applied to all integrated/calibrated peaks in the active signal. Purity is calculated from 5 or all spectra within the peak. The similarity curve is displayed in the PDA window. Peak Purity analysis can be optimized by setting custom preferences relating to the purity threshold, wavelength restriction and absorbance threshold.

**Import/Export Data:** Spectral data can be imported/exported in ASCII text formats to or from the Clarity software.

**Reports:** Users can easily include PDA options such as data 3D Display, Isoplot, Spectra, Peak Purity and Library Search results in reports using the intuitive Report Setup Dialog.

**Instrument Control** - A control module for Agilent 1100 DAD is available. Additional control modules for other PDA detectors can be developed upon request.

# Clarity Validation Kit for Operational Qualification

## Clarity Validation Kit:

Clarity Validator (precise analog signal generator device)

Clarity Validation Kit Manual

CD with all files necessary for performing the Operational Qualification

Cables

## Operational qualification tests:

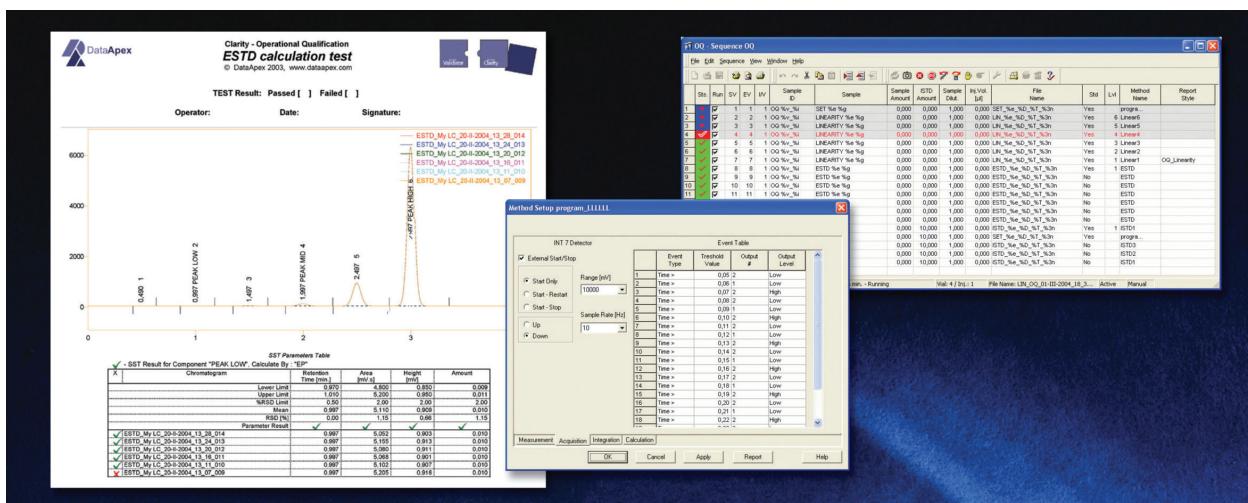
Retention time precision and accuracy

Voltage (peak height) measurement precision and accuracy

Area determination precision and accuracy

Calibration and calculations - ESTD and ISTD methods

Consistency of acquisition ranges



The quality of analytical data is an issue gaining increased attention in many laboratories today. One condition for ensuring the reliability of generated results lies in the validation of all instrumentation and procedures used for the acquisition of said data.

Commonly, three levels of validation (qualification) are relevant for chromatography data stations:

### Installation Qualification:

a procedure confirming that the datastation was successfully installed and that the installation contains all the required files of the correct version. Installation qualification is an integral part of the Clarity Chromatography datastation installation procedure.

### Operational Qualification:

a procedure confirming that the datastation is performing according to the manufacturer's specification.

The **Clarity Validation** kit serves this purpose.

Using a precise peak generator, chromatographic data is acquired and analyzed with prepared procedures and the acquired results are compared with expected values.

### Performance Qualification:

a procedure confirming that the analytical system is fit for a given type of analysis. Usually, the overall system performance is tested by this procedure with respect to the requirements of the desired application.

The Clarity data station offers many tools in the **System Suitability Test (SST)** module to efficiently evaluate the system performance.

The **Clarity Validation Kit** is designed

to perform the **Operational Qualification**

of the **Clarity Chromatography Station** (version 2.2 or higher) with **INT7** or **U-PAD** A/D converters.

An optional **Clarity SST** module is necessary for data evaluation.

The kit is primarily intended for trained service personnel, who regularly perform validations of chromatography systems using **Clarity** data stations. However it can also be used by experienced users for in-house validations. the operator must be familiar with **Clarity** datastation operations.

## Ordering Informations

P/N	Description
C50	Clarity, Single instrument SW
C40	Clarity Lite, Single instrument SW Only
C59	Clarity, Off-line version for data evaluation
C51	Clarity, Element analysis Single instrument SW
C55	Clarity, Single instrument Add-on
A22	SST, SW Module for system suitabilityTest
A28	SW Module for GPC Data Processing
A29	SW Module for PDA Data Processing
A30	SW module for EA(Elemental analysis)
A31	SW module for CE(Capillary electrophoresis)
A32	SW module for NGA Calculations
A23	SW Module for GC Control
A24	SW Module for HPLC Control
A26	SW Module for Autosampler Control
C532	SW-Upgrade; from CSW17, CSW32 to Clarity 1 Instrument
C550	SW-Upgrade; Add on Instrument(Only for C532)
C432	SW-Upgrade; from CSW17, CSW32 to Clarity Lite
C540	SW-Upgrade; from Clarity Lite to Clarity 1 Instrument
C590	SW-Upgrade; from CSW17 Eval, CSW32 Eval to Clarity Eval
C600	Version update from Clarity 2.x to Clarity 2.4(Incl. HW key)
I71	INT7, A/D Converter, Internal PCI, 1-Channel
I92	INT9, A/D Converter, Internal PCI, 2-Channel
I94	INT9, A/D Converter, Internal PCI, 4-Channel
U22	U-PAD2, A/D Converter, External, USB, 2-Channel
N2	NetPad, TCP/IP, External, 2-Channel(Only Clarity Lite)
A27	CB20, Internal pump control converter
CVK	Validation kit for OQ
A951	HW Upgrade ; from INT3, INT5, to INT7, 1-Channel
A962	HW Upgrade ; from INT3, INT5, to INT9, 2-Channels
A964	HW Upgrade ; from INT3, INT5, to INT9, 4-Channels
A971	HW-Upgrade; from INT3/5 to U-PAD, 1, 2-Channels
A974	HW-Upgrade; from INT3/5 to 2xU-PAD, 4-Channels
A96	HW-Upgrade; from CB11 ISA Converter to CB20
IAG11	GPIB - PCI Interface card For Agilent 1100 control, cable included
IAG12	GPIB - USB Interface card For Agilent 1100 control, cable included
IGC17	RS232 Interface card for Shimadzu GC17A Control
IHP58	RS232 Interface card set for 5890 Control
IHP76	RS232 Interface card for Agilent 7673A(B) Control
IGLN1	RS232/GSIOC Converter for Gilson control
IGLN2	Adaptor GSIOC Cable for two Gilson devices
MC01	MultiCOM 1x USB to 6x RS232 Converter
OPT01	OPT-USB Optical to USB adaptor for Shimadzu Control
DID01	Digital input device for Ecom's detector control